

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-4 (Cancelled)

Claim 5 (Currently amended): The pullulanase of Claim 6, wherein the pullulanase is obtained from a *Bacillus* ~~deramification~~ deramificans having the designation T89.117D in the LMG culture collection.

Claim 6 (Previously presented): A truncated *Bacillus* pullulanase comprising a deletion of about 100 amino acids from the amino terminus of a pullulanase obtainable from *Bacillus deramificans*, wherein said truncated pullulanase comprises a conserved Y region, and is capable of catalyzing the hydrolysis of an alpha-1, 6-glucosidic bond.

Claim 7 (Previously presented): A truncated *Bacillus* pullulanase comprising a deletion of about 200 amino acids from the amino terminus of a pullulanase obtainable from *Bacillus deramificans*, wherein said truncated pullulanase comprises a conserved Y region, and is capable of catalyzing the hydrolysis of an alpha-1,6-glucosidic bond.

Claim 8. (Previously presented): A truncated *Bacillus* pullulanase comprising a deletion of about 300 amino acids from the amino terminus of a pullulanase obtainable from *Bacillus deramificans*, wherein said truncated pullulanase comprises a conserved Y region, and is capable of catalyzing the hydrolysis of an alpha-1,6-glucosidic bond.

Claim 9 (Previously presented): A truncated *Bacillus* pullulanase comprising a deletion that is 98 amino acids from the amino terminus of *Bacillus deramificans* pullulanase, wherein said truncated pullulanase is capable of catalyzing the hydrolysis of an alpha-1, 6-

glucosidic bond.

Claim 10 (Previously Presented): A truncated *Bacillus* pullulanase comprising a deletion that is 102 amino acids from the amino terminus of *B. deramificans* pullulanase, wherein said truncated pullulanase is capable of catalyzing the hydrolysis of an alpha-1, 6-glucosidic bond.

Claim 11 (Cancelled)

Claim 12 (Previously presented): A modified *Bacillus* pullulanase which is capable of hydrolysis of an alpha-1,6-glucosidic bond, wherein the modification is an addition of one amino acid to the amino terminus of a mature pullulanase amino acid sequence obtainable from a *Bacillus deramificans*, wherein the additional amino acid at the amino terminus is an alanine.

Claim 13 (Cancelled)

Claim 14 (Previously presented): A truncated *Bacillus* pullulanase produced by a method comprising the steps of

a) obtaining a recombinant host cell comprising nucleic acid encoding a mature *Bacillus* pullulanase said nucleic acid having at least 90 % identity to the polynucleotide sequence as shown in SEQ ID NO:1,

b) culturing said host cell under conditions suitable for the production of a truncated pullulanase, and

c) recovering the truncated pullulanase wherein the truncated *Bacillus* pullulanase comprises a deletion of about 100 amino acids from the amino terminus of a *Bacillus deramificans* pullulanase, wherein said truncated pullulanase comprises a conserved Y region, and is capable of catalyzing the hydrolysis of an alpha-1,6-glucosidic bond.

Claim 15 (Previously presented): The pullulanase of Claim 14 wherein said host cell is *B. licheniformis* which comprises a first gene encoding Carlsberg protease and a second gene

encoding endo Glu C protease, the first and/or second gene which codes for the protease(s) having been altered such that the protease activity is essentially eliminated.

Claims 16-26 (Cancelled)

Claim 27 (Currently amended): An enzymatic composition comprising a truncated *Bacillus deramificans* pullulanase ~~wherein said truncated pullulanase is selected from the group of pullulanases consisting of~~

a) a deletion of up to about 100 amino acids from the amino terminus of a *Bacillus deramificans* pullulanase,

b) a deletion of up to about 200 amino acids from the amino terminus of a *Bacillus deramificans* pullulanase, and

c) a deletion of up to about 300 amino acids from the amino terminus of a *Bacillus deramificans* pullulanase,

wherein said truncated pullulanase ~~of a), b) or c)~~ comprises a conserved Y position and is capable of catalyzing the hydrolysis of an alpha-1,6-glucosidic bond.

Claim 28 (Previously presented): The enzymatic composition of Claim 27 wherein the truncated pullulanase has a deletion of amino acids from the amino terminus of up to about 100 amino acids.

Claim 29 (Previously presented): The enzymatic composition of Claim 27 wherein the truncated pullulanase has a deletion of amino acids from the amino terminus of up to about 200 amino acids.

Claim 30 (Previously presented): The enzymatic composition of Claim 27 wherein the truncated pullulanase has a deletion of amino acids from the amino terminus of up to about 300 amino acids.

Claim 31 (Previously presented): An enzymatic composition comprising the

pullulanase of Claim 9, wherein the pullulanase has the amino acid sequence as shown in SEQ ID NO:2 beginning at amino acid residue 99, a glutamic acid.

Claim 32 (Previously Presented): An enzymatic composition comprising the pullulanase of Claim 10, wherein the pullulanase has the amino acid sequence as shown in SEQ ID NO:2 beginning at amino acid residue 103, a glutamic acid.

Claim 33 (Original): The composition of Claim 27 further comprising an enzyme selected from the group consisting of glucoamylase, alpha-amylase, beta-amylase, alpha-glucosidase, isoamylase, cyclomaltodextrin, glucotransferase, beta-glucanase, glucose isomerase, saccharifying enzymes, and/or enzymes which cleave glucosidic bonds.

Claim 34 (Original): The composition of Claim 27 further comprising a glucoamylase.

Claim 35 (Original): The composition of Claim 34 wherein the glucoamylase is obtainable from an *Aspergillus* strain.

Claim 36 (Currently amended): The composition of Claim 35 wherein the *Aspergillus* strain ~~includes~~ is selected from *Aspergillus niger*, *Aspergillus awamori* and *Aspergillus foetidus*.

Claim 37 (Original): The composition of Claim 27 wherein said composition is in a solid form.

Claim 38 (Original): The composition of Claim 27 wherein said composition is in a liquid form.

Claim 39 (Previously presented): The composition of Claim 27 wherein said composition comprises at least 60% truncated pullulanase.

Claim 40 (Previously presented): The composition of Claim 27 at least 80% truncated pullulanase.

Claims 41-51 (Cancelled)

Claim 52 (Previously presented): The truncated *Bacillus* pullulanase of claim 6, wherein said deletion is from a pullulanase having the sequence shown in SEQ ID NO: 2.

Claim 53 (Previously Presented): The truncated *Bacillus* pullulanase of claim 7, wherein said deletion is from a pullulanase having the sequence shown in SEQ ID NO: 2.

Claim 54 (Previously presented): The truncated *Bacillus* pullulanase of claim 8, wherein said deletion is from a pullulanase having the sequence shown in SEQ ID NO: 2.

Claim 55 (Previously presented): The enzymatic composition of claim 27 wherein said deletion is from a pullulanase having the sequence shown in SEQ ID NO: 2.

Claim 56 (Previously presented): The truncated *Bacillus* pullulanase produced according to the method of claim 14, wherein the nucleic acid sequence encoding the mature pullulanase is SEQ ID NO: 1.

Claim 57 (Previously presented): The truncated *Bacillus* pullulanase produced according to the method of claim 14, wherein the mature pullulanase has the sequence shown in SEQ ID NO: 2.

Claim 58 (Previously presented): The truncated *Bacillus* pullulanase of claim 9, wherein the pullulanase is obtained from a *Bacillus deramificans* having the designation T89.117D in the LMG culture collection.

Claim 59 (Previously presented): The truncated *Bacillus* pullulanase of claim 10,

wherein the pullulanase is obtained from a *Bacillus deramificans* having the designation T89.117D in the LMG culture collection.

Claim 60 (Previously presented): The truncated *Bacillus* pullulanase of claim 6, further comprising a conserved VWAP (SEQ ID NO:9) region.

Claim 61 (Previously presented): The truncated *Bacillus* pullulanase of claim 7, further comprising a conserved VWAP (SEQ ID NO:9) region.

Claim 62 (Previously presented): The truncated *Bacillus* pullulanase of claim 8, further comprising a conserved VWAP (SEQ ID NO:9) region.

Claim 63 (Previously presented): The truncated *Bacillus* pullulanase of claim 14, further comprising a conserved VWAP (SEQ ID NO:9) region.

Claim 64 (Previously presented): The truncated *Bacillus* pullulanase of claim 27, further comprising a conserved VWAP (SEQ ID NO:9) region.

Claim 65 (Previously presented): The composition of Claim 31 further comprising an enzyme selected from the group consisting of glucoamylase, alpha-amylase, beta-amylase, alpha-glucosidase, isoamylase, cyclomaltodextrin, glucotransferase, beta-glucanase, glucose isomerase, saccharifying enzymes, and/or enzymes which cleave glucosidic bonds.

Claim 66 (Previously presented): The composition of Claim 32 further comprising an enzyme selected from the group consisting of glucoamylase, alpha-amylase, beta-amylase, alpha-glucosidase, isoamylase, cyclomaltodextrin, glucotransferase, beta-glucanase, glucose isomerase, saccharifying enzymes, and/or enzymes which cleave glucosidic bonds.

Claim 67 (New): A truncated *Bacillus* pullulanase produced by culturing a recombinant host cell in a culture medium under conditions suitable for the production of said

truncated pullulanase, wherein said host cell comprises nucleic acid encoding a mature *Bacillus* pullulanase, said nucleic acid having at least 90% identity to the polynucleotide sequence as shown in SEQ ID NO:1, wherein said truncated pullulanase comprises a conserved Y region and is capable of catalyzing the hydrolysis of an alpha-1,6-glucosidic bond, and wherein said truncated pullulanase comprises a deletion of about 100 amino acids from the N-terminus of the mature pullulanase.

Claim 68 (New): A truncated *Bacillus* pullulanase according to claim 67, wherein said truncated pullulanase is recovered from the culture medium.

Claim 69 (New): A truncated *Bacillus* pullulanase according to claim 67, wherein said host cell is a *Bacillus licheniformis* host cell.

Claim 70 (New): A truncated *Bacillus* pullulanase according to claim 67, wherein the nucleic acid sequence encoding the mature pullulanase is SEQ ID NO: 1.

Claim 71 (New): A truncated *Bacillus* pullulanase according to claim 67, wherein the mature pullulanase has the sequence shown in SEQ ID NO: 2.

Claim 72 (New): A truncated *Bacillus* pullulanase according to claim 71, wherein said truncated pullulanase comprises a deletion of 98 amino acids from the N-terminus of SEQ ID NO:2.

Claim 73 (New): A truncated *Bacillus* pullulanase according to claim 71, wherein said truncated pullulanase comprises a deletion of 102 amino acids from the N-terminus of SEQ ID NO:2.